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purpose is to stay. It not only tells us all we know of the distribution of energy in the black body spectrum in its thermal relations, but it gives us, indirectly, perhaps the most accurate data at hand of the number of molecules per normal cubic centimeter of the gas, of the mean translational energy of its molecules, of the molecular mass, of the Boltzmann entropy constant, even of the charge of the electron or electric atom itself. Under the guidance of Nernst it has created new chapters in the treatment of specific heats at low temperatures, their evanescence at the absolute zero of temperatures, the evanescence of the specific electrical resistance at zero, all more or less bearing on Dulong and Petit's law. Not less vital is the introduction of the new universal constant hitherto not even suspected, the "Wirkungs quantum," an equivalent of the Hamiltonian integral of action. Here then is a departure from continuity postulated for energy, which will hereafter operate with definite finite elements only. The condition of occurrence of such elements in any definite relations, can for this reason be specified as a case of probability.

Of the Planck molecular oscillators I must speak briefly. If operating continuously under the established electromagnetic laws they lead to the impossible distributions of energy in the spectrum investigated by Rayleigh and Jeans. But if emitting only, when their energy content is a whole number of energy elements, a case thus involving the entropy probability of Boltzmann, Wien's law and the numerical data referred to are deducible with astounding precision.

This then is the peculiar state of physics to-day. The appearance at the very footlights of the stage, of a new constant, the meaning of which nobody knows, but whose importance is incontestable. Moreover energy is seen there under an entirely new rôle. Grasping at greater freedom she has hopelessly involved herself in the meshes of the doctrine of probability. There was a time, the time antedating Mayer (1840-42) and Joule (1843), Kelvin and Clausius, when to speak of indestructible energy would have been rash. It was a glori-

ous epoch when she first appeared in the full dignity of her conservative and infinite continuity. In contrast with this, the energy of the present day is scarcely recognizable. Not only has she possessed herself of inertia, but with ever stronger insistence she is usurping the atomic structure once believed to be among the very insignia of matter. Contemporaneously, matter itself, the massive, the indestructible, endowed by Lavoisier with a sort of physical immortality, recedes ever more into the background among the shades of velocity and acceleration.

But the single equation of nature, aimed at by Lagrange and Hamilton, by Weber and Maxwell in their several ways, has nevertheless throughout all this turmoil reached a more profound significance and now even holds dynamics, awkwardly it is true but none the less inexorably, in its grasp. That it is not complete, that it never can be complete, is admitted (for the absolute truth poured into the vessel of the human mind would probably dissolve it); but that it is immeasurably more complete to-day than it was yesterday is as incontrovertably true as it is inspiring.

CARL BARUS

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CONTEMPORARY UNIVERSITY PROBLEMS¹

THE story of Clark University during the quarter century of its existence, the close of which we celebrate to-day with the alumni, under the inspiring guidance of Dr. French and his committee, has in some respects no parallel in academic history. Especially the first few years of our annals have both brighter and darker pages than I can find in the records of any university. Thirteen of us instructors had taught or taken degrees at the Johns Hopkins, and we left that institution, which had added a new and higher story to the American university, when it was at the very apex of its prosperity and hence were naturally

¹ Address given on the occasion of the celebration of the twenty-fifth anniversary of Clark University by Dr. G. Stanley Hall, president of the university.

inspired with the ideal of taking the inevitable next step upward, as indeed were all the other members of our original faculty, which was remarkable, if not unprecedented in this country, in its quality. Of the no less notable original board of trustees, every member of which has now passed away (while death has not once invaded the ranks of our professorial corps), the triumvirate, Hoar, Devens and Washburn, who stood nearest to Mr. Clark, as his executive committee of all work, estimated the resources that were ultimately to be at our disposal at from eight to twelve million dollars, and very likely more.

I was at the outset sent on an eight months' trip to Europe, with several score letters of introduction, including one from the national government which gave me access to the inside workings of *Kultus Ministeria* and university circles and archives, so that my trip constituted a pedagogic journey I think almost without precedent. Twenty-five years ago these very weeks I was on this unique mission and was surprised to find the most eminent men of learning in Europe profoundly interested in it, and so lavish with their time, sympathy and counsel. I was entertained by Lord Kelvin, Pasteur, Helmholtz, Jowett, and some scores of others of the greatest living leaders in scientific thought; went on a trip of inspection of German universities as the guest of the Prussian Minister of Education, von Gossler; perhaps most embarrassing of all, was taken in state by General Trepnoff on a visit to the two great Russian military schools near St. Petersburg, in each of which an all-day's program of military evolutions had been arranged for my special edification; was a guest of honor at a meeting of Swedish universities, etc. My instructions from Mr. Clark had been to see everything and every institution possible, collect building plans, budgets, administration methods of every kind, and find out a few of the best men who might be willing to come to a new institution here, but to engage no one, but to be ready to negotiate with them later. The amazement to me was how lavish everybody was of advice, how cherished and often how

elaborate were the ideals of university men, many if not most of whom seemed to have imagined installations of their own departments rivaling not only Bacon's House of Solomon, but sometimes almost suggesting apocryphal vision. From my voluminous notes of that trip could be compiled ideals lofty, numerous and far-reaching enough to inspire all the universities of the world for a century, and to organize a new one here for the conduct of which ten times ten million dollars would be sadly inadequate.

They gave me plans of the then new four-million-dollar university building at Vienna, of the new Sorbonne at Paris, its rival, of the complete new university which Bismarck had established at Strassburg to show Alsace-Lorraine, which Germany had just annexed, and to show especially France, what the Teutons really meant by higher education, of the newly built university at Kiel, in which Germany sought to impress upon the Scandinavians the same object-lesson in her newly acquired Schleswig-Holstein, and which was designed to compete with the neighboring university of Copenhagen, just as she rehabilitated Koenigsburg to impress the same lesson upon the nearby Russian rival institution at Dorpat. I was given in some cases the secret *état* and the unprinted *Statuten* of the universities,—all this until I felt an almost Tarpeian embarrassment, especially as I was in nearly all these places utterly unknown and an object of interest solely because of my unique mission. I found young professors prone to see visions, and old ones to dream dreams, each for his own department, that all a king's ransom would be inadequate to make real. Of all this I wrote Mr. Clark and my colleagues here awaiting the great instauration. The harvest home-coming, with all these sheaves of suggestion and inspiration, marked the zenith of great expectation and of hope tiptoe on the mountain-top. For years and sometimes even yet, European savants who first heard of Worcester from me and have since known it only as the home of Clark University, seemed often, to our great embarrassment, to assume that many or most

of the ideals that we then discussed together are now realized in this golden land of promise, and rank us far above our own modest sense of our deserts.

If I came home slightly intoxicated with academic ideals, so were all of us in some degree, according to our temperament, but a reality that was sobering enough soon confronted us. I can not enter here upon the details of our disappointments, culminating in the tragic hegira to Chicago and elsewhere of three fifths of our faculty. If ever there was an academic tragedy, a *via crucis*, a veritable descent into Avernus, it was here. The story of these years has been carefully written out, with everybody heard from, and all the divergent interpretations of what occurred and what it meant faithfully set down, and filed away in our archives, and perhaps after another twenty-five years or yet another, it may be published.

Suffice it to say that although we started with far less than, justifiably or not, we had hoped for, we began the fourth year, 1893-94, with only about one fourth of the total annual resources that we had the first year. In the seven years that followed, down to the founder's death in 1900, we had for all purposes only four per cent. of the income of \$600,000 plus that of \$100,000 more for the library, that is, less than \$30,000. Several of us who remained here were tempted by larger offers to what seemed more promising fields, but, on the whole, and I believe no one regrets it, we elected to stand by here. These lean years were, however, characterized by two features. First, they were years of unique harmony. There was no friction. We stood and worked shoulder to shoulder. And this is of prime importance in a small institution like this. In a great university discords can and always do occur, but here, where discontent in any department disturbs the whole institution, accord is one of the prime necessities. The other feature of these years was intense devotion to research and to teaching, and our productiveness, whether compared with our numbers or our income, has never been greater, and indeed, I wonder if that of any

other institution has been greater relatively to its size. Perhaps the alumni of these days were, and will ever be, a little nearer to the center of the hearts of those who went through them, and it is significant, and can be no cause of jealousy to others, that it is they who are leading in the epoch-making activities that center about to-day and mark this as the date from which henceforth our alumni will be a potent factor in our future history. Their newly and well organized support, their enthusiasm for the spirit of research, which is our inspiration, will henceforth greatly re-enforce all our best efforts here and be an inspiration to our future development.

With the dawn of the century came also the college, which has given us 51 students who have already taken degrees in the last eight years, although it has its own independent purpose. As to it, we are brethren, children of the same parent or, to change the figure, a married couple, and unlike married couples we can never be divorced, so that he who would make discord between us is an enemy to both, and every man who helps the other is a friend to both. Any encroachment of either upon the other's domain or any effort to profit or exalt the one at the other's expense, is bringing discord into sacred family relations. Our two-in-one or dual unity is unique, delicate, imposes new responsibilities and presents also inspiring possibilities for a new solution of some of the highest academic problems. I think we can truly say that each is now a noble stimulus to the other. We are proud of the college and we are so just in proportion as we know and understand its problems, aspirations and achievements. We are proud of the name and the work of its first great president and of the rare men he brought here, whose growth in knowledge and power, together with those of the college alumni whom they trained in his day, constitute his living monument, and we of the university salute the college colors in our decorations to-day, and hail with pride and give our heartiest Godspeed to the second president of the college, who is not only carrying out the ideals he inherited of a three years'

course of non-athletic and citizen-building functions, but is going further and making the college a leader and light among others in the land. Would that some one would offer a prize for some pregnant symbol, seal or even slogan or song typifying this unique conjunction, which college and university should forever unite to use! Could we not fitly commemorate this occasion by a new resolve that there shall never be tension or strain between us, and that a policy of mutual help shall henceforth animate us both?

In the recent voluminous literature on colleges, so much under discussion of late, we have several characterizations of the ideal college professor, and these agree pretty well. He must be a good man, a model citizen, a gentleman and a scholar, a teacher born, made or both, tactful, and in close personal relations with his students, anxious and able to teach them all they are capable of learning in his department, a man whose character will be normative and influential for good, fitting students, not for the university, nor even for professional or technical careers chiefly, but for their work in life in general, and evoking all their powers. Noble as are all these traits of nature and nurture, and rare as is their combination, and exacting as are the conditions of instruction and parental care, many college professors go further and are not even content with the useful work of making textbooks, but really add to the sum of human knowledge by their researches, and it is a satisfaction to us that so many of those here are with and of us in this respect.

For the university professor research is his prime function. He must specialize more sharply, must not only keep in constant and vital *rapprochement* with everything that every creative mind is doing in his field the world over, but he must hear and lay to heart every syllable that the muse of his department utters to every co-worker everywhere, and best of all, she must also speak new words through him. There is a vital sense in which he stands in closer relation to his co-workers in other lands than to his colleagues in the same institution. The chief momentum of the vital

push-up in him impels him to penetrate ever a little farther into the unknown, to erect some kiosk in Kamchatka, where he can wrest some new secret from the sphinx, who has far more to reveal than all she has yet told. Whenever he grows impotent to do this, he becomes only an emeritus knight of the holy ghost of science. Studies of the age when men in various departments do their best work show that scientists are the oldest of all the creators of culture values on the average, but that there is more individual variation, so that they cross the dead line both older and younger than any others. It is one of the hardest things in the world to be and remain a productive investigator. There are so many journals and books to be read, so many and constant alterations and adaptations, needful to press the questions we ask nature home and to get an answer, such changes of methods and apparatus, so much that was yesterday new and will to-morrow be obsolete if we would not abandon what Janet calls "*la fonction du réel*," and take some kind of flight from reality and its ever-pressing *devoir présent*. But if research is hard and the life it demands beset with dangers, so that many are always falling by the way without giving any sign of their demise to outsiders, this work has its supreme reward, and I can not believe that there is any joy life has to offer quite so great as the Eureka joy of a new discovery.

Not only this work itself, but its conditions are amazingly complex, unstable, and ever shifting. Just at present it seems to me that academic unrest was never quite so great the world over, and that the near future never promised so many important changes. Some abuses, great and small, have of late grown rank and demand remedy. Certain vicious tendencies must be corrected and reforms made. Bear with me if I ask you to glance briefly at a few of these.

Beginning with the Teutonic countries, since 1907 the assistant professors and docents have developed a strong inter-institutional organization against the head or full professors. The unprecedentedly rapid growth in the size

of the student body everywhere has resulted in what Eulenberg calls a lush "*Nachwuchs*" of assistants of all grades. Statistics show that on the average the *Extraordinarii* or assistant professors receive this appointment at the age of 37, at an average salary of \$523, and remain in this position nearly 20 years, attaining an average salary of \$1,200, before promotion, at the average age of 57. These now constitute, with the docents, about half the teaching personnel of German institutions, and they often have neither seat nor vote in the faculty and little participation in the corporate life of the institution. In the municipal university which opens at Frankfurt this fall it was even proposed to have a president of the American type, to safeguard the assistants against the oppression of the full professors. A few years ago Tübingen, and last year Zürich, radically revised their ancient statutes to remedy these evils, and the projected university at Hamburg will go yet further. The two new universities in Hungary, at Pressburg and Debreczen, and the private one at Hongkong—these grant more liberty and show more appreciation of the enthusiasm and ideals of the younger members of the faculty. Even students in Germany have caught the spirit of unrest, if not revolution, and now have a strong inter-institutional organization, and their pamphlets are boldly demanding better methods of teaching, printed outlines of professors' lectures, are trying to develop a sentiment that no instructor shall ever repeat in a lecture anything he has ever published; are calling for more options, especially more freedom of choice in the selection of subjects for their theses and more meaty topics for them that do not make their work ancillary to that of the professor, more personal rights to what they produce or discover in them, a longer period of *hospitieren* or of trying out each course before they finally sign for it, more and better seminaries with better tests for admission, more practical courses, better access to books, journals and library facilities generally, less overcrowding and more elimination all the way from *Ober-Sekunda* in the *Gymnasium* to the doctorate,

better social opportunities, dormitories, more personal contact with the professors, less restrictions on their personal liberty, reform of the corps, honor system and the *Mensur*. This unrest, although it seems ominous to conservatism, can not fail to prevent waste and bring reform.

In the English universities agitation has had many recent expressions, from Lord Curzon's demand for reforms in 1909 on to Tillgard's of last year. Here the protestants grant that these institutions still breed the flower of national life, the English gentleman, but demand better library facilities than the individual colleges, with their wasteful duplication, afford, and especially more of what the critics so strenuously insist is still lacking and that parliament should enforce, namely, more teaching and research. Thus the deepening sense that something rather radical must be done seems now crystallizing into just what that something should be. In France and in Russia unrest is greater and reforms are more loudly demanded.

In this country academic unrest has been largely directed against organization and administration. In the old days the college president, though he usually taught, was supreme and autocratic, and as leading institutions grew and he ceased to teach, the concentration of power in his hands became altogether excessive. The foundation of new institutions, the Hopkins, and a little later Stanford and Chicago, greatly augmented his power under our system. He had to determine the departments, select professors, fix their status, build, organize, represent the institution to the board and public, perhaps the legislature, plunge into the mad, wasteful competition for students and money, lay supply pipes to every institution that could fit. Never was the presidential function so suddenly enlarged nor its power so great and uncontrolled as a decade or two ago. Even the University of Virginia and other southern universities, which had only a president of the faculty, elected by its members, fell into line, and a reaction toward democratization, which in its extreme form seemed sometimes

almost to adopt a slogan, "*Delindus est prex*," was inevitable. In the Cattell movement abundant incidents of arrogance and arbitrary, if not usurped, power were collected, and it was even insisted that although charters or conditions of bequests, to say nothing of American tradition, would have to be reversed, it was urged that the president should be only chairman of the faculty, elected perhaps annually by them, and in the literature of this movement we find occasionally the radical plea that some or all of the powers of the board should be turned over to the faculty, who should at least be given control of the annual budget. More lately the movement of protest here is against the autocracy of the dean, whom the president had created in his own image, and who sometimes exercises a power that he would never dare to do, and who in large institutions has constructed a mechanism of rules, methods, procedures, standards, which have almost come to monopolize the deliberations of the Association of American Universities, which fortunately can not prescribe or legislate for its individual members. University deans have often created rules which they themselves can suspend for individuals, and this has greatly augmented their power. It is they largely who have broken up knowledge into standardized units of hours, weeks, terms, credits, blocking every short cut for superior minds and making a bureaucracy which represses personal initiative and legitimate ambition. Just now perhaps we hear most remonstrance against head professors and statements that the assistant professors and younger instructors in their departments are entirely at their mercy, that they are burdened with the drudgery of drills, examinations, markings, all at small pay, while their chiefs take the credit, so that the best years of the best young men, who are the most precious asset of any institution, or even of civilization, are wasted. Indeed we have vivid pictures of the hardships which often crush out the ambitions of young aspirants for professorial honors and tend to make them, if they ever do arrive, parts of a machine with no ideals of what

sacred academic freedom really means. Happily now the best sentiment of the best professors now organizing inter-institutionally to safeguard their own interests and those of their institutions, stands for a most wholesome and needed movement which is sure to prevail.

So far I submit to you and to my colleagues that Clark University, not through any wisdom or virtue of its president, although perhaps a little through the fact that he is a teacher and does not spend all his time in organizing, but owing to its small size, its unprecedented absence of rules, its utterly untrammelled academic freedom, is to-day in a position to lead and not to follow in the wake of this movement. No one here wants autocratic personal power, but we do all want the best attainable, whatever it is. Each department here is almost as independent and autonomous as if there were no other. We have no deans, few assistant professors, and so no tyranny of departmental heads, no complaints on the part of students, as in Germany, that we are not doing the best we can for them, so that this world-wide movement for academic reform we ought to consider as a great and new opportunity to us all, trustees and faculties, at this psychological moment to realize our own advantage, and to carefully look over our present system and see if we can not use this opportunity to begin the new quarter century with our lamps retrimmed and burning bright, and alert and profiting by every suggestion that the academic *Zeitgeist* is now murmuring like the Socratic daemon in our ears.

Let us, then, look our present situation and ourselves frankly in the face. With the indefatigable labors of Senator Hoar in securing a just and legal execution of Mr. Clark's difficult will, labors which some of his colleagues in the board thought almost justified us in calling him our second founder, with a board more active and interested in our affairs, external and internal, than ever before, as their cooperation in this commemoration typifies, with our funds better invested and yielding a trifle more than they have ever

done, with an admirable library, the creation, body and soul, of Dr. Wilson, who has the greatest genius of friendship of us all, with the reestablishment of the department of chemistry, which was dropped for a few years, with the increase of salaries, from time to time, as far as means permitted, inadequate though most of these still are compared with the increased cost of living; with more departments and professors and instructors—we seem to have entered upon a settled period of prosperity and growth that promises that the next quarter of a century will far transcend the past, and, now that all the perturbations of the first formative era are over, we can look forward with confidence that the university will go on in the general direction it has already so faithfully held to during its period of storm and stress, *in sæcula sæcularum*.

We have no greater distinction than that which has come from always preferring quality, attainment and ability to numbers, and that these standards may never be lowered is the most heartfelt wish and prayer of all of us. My greatest joy to-day is in the spontaneous testimonials of appreciation and loyalty of our alumni in leaving their work and coming here, at this most inconvenient season and sometimes from a great distance, and giving us or wording their cordial personal greeting and Godspeed, and even in contributing, not out of their abundance, for most of them are moderately paid professors like ourselves, but from a sense of gratitude and as a token of good will, to the fellowships which constitute our very greatest need.

Turning to the future, the changes we need here are largely but by no means wholly in harvesting what we sowed at the start and assiduously cultivated ever since, for which the time is now ripe. It would be preposterous to lay out our course now for another quarter century. We must always maintain keen orientation in an ever wider and more intricate field. To my mind there should always be a specialist here and in every institution in what might be called the higher pedagogy and in academic history, whose business it is to keep keenly alive to all that is

doing in academic life the world over. Especially now, when these changes are so rapid, some one must spend much time in the outlook tower, and I would even hazard the strong opinion that, had foreign institutions had a specialist in the conning tower, intent on studying the ever changing signs of the times and trained in academic statesmanship, many, if not most, of the errors that have caused our own and foreign universities so much waste of energy in recent years, might have been avoided.

The time is at hand when university rectorates, presidencies, chancellorships, or whatever their name, can no longer be filled by any professor or even outsider who can secure election, but will require men who, whatever else they are or know, are experts in the history of the higher culture and its institutions, from the four great academies of antiquity down, who know the story of mediæval universities of the church and then of the state, of the guilds of scholars, the rise and present status of learned societies and academies, the great reforms of the past and the yet more significant reconstructions now evolving, the governmental patronage of learning and research, from the day of the Medici down to contemporary legislation for higher institutions, national and state, present-day centralization and the efforts against it in France, the many universities lately established by colonial policies, the world-wide movement of university extension. He must suggest ways and means to his colleagues for achieving their own even if unconscious ideals; help free investigators to be the supermen they are called to be, each in his own way, have a minimum of arbitrary authority and a maximum of faculty cooperation, catch and sympathetically respond to and find his chief inspiration in the fondest, highest, if secret, aspirations of each of his coworkers, who must not be content with the stale ways of the present perfervid competition for dollars and students or with the mere horizontal expansion, the multiplication of machinery or devices for efficiency of factory type, but study precedents, culture trends, and believe profoundly in the power of faculty

democratization and do his utmost to develop it, regardless of his own personal or official prestige or authority. On the continent, mayors are trained professional experts, and cities vie with each other competitively for their services and find they can well afford to do so, for their special training means vast economies. Universities in this country, if not the world over, are more nearly ready than are cities to profit by this example, and their gain thereby would be even greater. Twenty years ago Professor Paulsen, of Berlin, the best representative of the higher pedagogy I plead for which that country has yet produced, warned German universities of the very dangers which have now waxed so grave, and with which they are battling, and the presidents here have only too good reason to look either with jealousy or with hope, according to their temperaments, upon the now rapid addition of the higher story of academic pedagogy to the old schoolmaster's pedagogy of the grammar and high school, and development in this direction is another of the pregnant signs of the future.

Think of the changes since we began. Many special lines of research have their own institutions where little or no formal teaching is done, like astronomic observatories, the Rockefeller Institute, Wood's Hole, Cold Spring Harbor, the Carnegie Institution, with all the possibilities of his will, the question of a national university, always with us, just now of the Fess hundred-million-dollar type, to be devoted chiefly to research, the enormous expansion of teacher-training in nearly every higher institution of this country, a movement that is almost without precedent in its magnitude and suddenness, the augmented stress laid upon practical applications of pure science—these constitute a new environment, as also do the active and well-organized but silent field agencies of most large institutions both to recruit students, with competing agents at the ear of every boy who thinks of going on, and also to place their graduates in every academic vacancy. These are problems to which a presidential or other agency must give great and growing attention and for

which the president of the future must have special training, and in which also the faculty must share the burdens of administrative responsibility since questions must often be decided one way or the other, while those who determine them are uncertain, themselves, so that criticism accumulates.

As to professors, the best of them make an almost unprecedented sacrifice and could have achieved the highest success in financial, professional, political (witness President Wilson) and other lines. They know the price they pay and are willing to pay it, but must have as their compensation the boon of security and liberty to teach and investigate freely what and how they will. The university professorate, too, means not only the cult of specialization but of individuality. Even idiosyncrasies are to be not only tolerated but respected and perhaps welcomed. The university should be the freest spot on earth, where human nature in its most variegated and acuminated types can blossom and bear fruit. The factory type of efficiency has no place there. Each must make himself as efficient as possible, but in his own way and independently of all external circumstances, and without the multiplication of machinery, so that an able organizer with nothing to do but to administer might prove an unmitigated curse to all the best things a professor and even a university stand for.

Thus now I, who with one tiny exception, have never, during all these twenty-five years, to a single citizen of Worcester hinted at a donation, will say a word which I wish all would hear and consider. We greatly need and shall always need more funds to strengthen existing and to found new departments. Though we bear another name, we are, fellow citizens, your University of Worcester. In all the spheres we touch, we have spread the name and added to the fame of this Heart of the Commonwealth. If we had ten million dollars more, not one of us would gain personally, but should only have more work, for we are only administering the highest of charities.

If you doubt that this is the highest, listen

to the conclusion of the report of the most elaborate parliamentary commission Great Britain ever knew, of forty volumes and nearly nineteen years in the making, covering all British charities of every kind, more than twenty thousand in all, which is: that of all objects of charity, the highest education has proven wisest, best, and most efficient of all, and that for two chief reasons, first because the superior integrity and ability of the trustees who consent to administer such funds, together with the intelligent appreciation of those aided by them, combine to furnish the best guarantee that they will be kept perpetually administered in the purpose and spirit of the founder whose name they bear; and second, because in improving higher education all other good causes are most effectually aided. Since the first endowment of research in the Greek academy, porch, grove and garden, from which all our higher institutions have sprung, thousands of spontaneous free will offerings have borne tangible witness to the sentiment so often and vividly taught by Plato, that in all the world there is no object more worthy of reverence, love and service, and none that it pays a civilization better to help to its fullest development than well-born, well-bred, gifted, trained young men who desire to be masters in an age when experts decide all things, for in them is the hope and the future leadership of the race, and to help them to more of the knowledge that is power is the highest service of one generation to the next. And how this has appealed to all ages! Oxford and Cambridge have 1,800 separate endowed fellowships and scholarships, to say nothing of the smaller exhibitions. Leipzig has 407 distinct funds, the oldest dating 1325, and wherever the higher academic life has flourished we find scores of memorials bearing the names of husbands, wives, parents, children, and providing for students of some special class, locality or establishing or benefiting some new department or line of investigation, theoretical or practical; and now that the *rapport* of business, government and all social and cultural institutions was never so close, all who give greatly and wisely, or who make

or suggest bequests, have a new *noblesse oblige* to consider.

Cold facts and figures finally show a few things that I beg you all to ponder now. These are, that compared either with the size of our faculty, the number of departments, or our annual budget, we have fitted more men for higher degrees, seen more of them in academic chairs, where they are found in all the leading institutions of the land, including some dozen of presidencies, first and last, published more original contributions which seek to add to the sum of the world's knowledge, have a larger proportion of members of our faculty starred as of first rank in Cattell's census of the competent, had closer personal and often daily contact with students, and given more individual help outside of classes, had more academic freedom (for no one in our history has ever suffered in any way for his opinions), had more autonomy in our departments, each of which is a law to itself, had less rules and formalities of every kind, and had a president who was less president and more teacher, good or bad, spent less time in devising ways and means of seeking contributions from our friends here, advertised less and avoided all publicity more, until now, when I am, just for this one moment, throwing all our traditions of silence, modesty, absence of boasting about our work, to the winds. In these respects we exceed any of the other twenty-four institutions of the Association of American Universities.

This Clark University means, has stood for and will forever stand for, and this is why we all love and have put the best twenty-five years of our lives into her service and wish we all had another quarter of a century to serve her better. This is what brings you alumni back with your offerings, your loyalty and hearty good wishes. This is the university not made with hands, eternal in the world of science and learning. Clark University is not a structure, but it is a state of mind, for wherever these ideals reign Clark men are at home, and all who have them are our friends and brothers.

It is this ideal that sustained us in our darkest days and now lights up the future

with a new glow. Is there any joy of service to be compared with that of the investigator who has wrung a new secret from the heart of nature, listening when she has whispered a single syllable of truth unuttered before, who has been able to add a single stone to the great temple of learning, the noblest of all the structures ever reared by man? Is there any more religious calling than thus thinking God's thoughts after him, and proclaiming the gospel of truth to confirm faith, prevent illness, deepen self-knowledge and that of society, industry, give us mastery over the physical, chemical, biological energies that control the world, and develop mathematics, the language of all who think exactly, a language which all sciences tend to speak in proportion as they become complete? This is why research is religious and the knowledge gained in the laboratory to-day may set free energies that benefit the whole race to-morrow. Is not an institution devoted, heart and soul, to this sort of work, the best thing any community can have in its midst, and should it not be cherished as the heart of this "Heart of the Commonwealth"?

G. STANLEY HALL

CLARK UNIVERSITY

*RUSSIAN VERSUS AMERICAN SEALING*¹

IN recent discussions of matters relating to the fur seals of the Pribilof Islands great stress has been laid in certain quarters upon the similarity between the recent crisis in the herd's condition and a crisis in which it found itself in 1834, during Russian control. Since 1896 pelagic sealing has been looked upon by the majority of those having to do with the herd as the sole cause of its decline. But in 1834 and prior to that time there was no pelagic sealing, only land sealing. The argument, has, therefore, been that land sealing was common to both crises and hence a probable cause of decline in one as well as in the other.

Land sealing as practised upon the islands

¹ Presented at the forty-fourth annual meeting of the American Fisheries Society in Washington, D. C., September 30-October 3, 1914.

since 1868, when the herd came into the possession of the United States, has consisted in the taking of the superfluous young male seals at or about the age of three years, the fur seal being polygamous and its handling being analogous to that of the commoner domestic animals. Pelagic sealing was an indiscriminate form of sealing, conducted in the open sea, while the animals were on their winter migration in the Pacific Ocean or on their summer feeding excursions in Bering Sea, both of which take them far from land. Investigations of the pelagic catch show conclusively that sixty-five to eighty-five per cent. of the animals taken have been gravid or nursing females, with which died their unborn or dependent young.

There can be no dispute regarding these two forms of sealing, as they have been conducted, at least since the beginning of pelagic sealing, about the year 1880; the records are exact and complete. The question therefore turns upon the nature of Russian sealing at and prior to 1834, of which the records are not so complete.

In the debates in congress upon the fur-seal law of 1912, in which land sealing was suspended, as a measure necessary for the protection and preservation of the herd, Senator Shively, of Indiana, made the principal speech in the Senate, taking as his thesis the assertion that the Russians never killed anything but bachelor seals. Representative Goodwin, of Arkansas, made the leading speech in the House and his thesis was that the Russians did not kill female seals. These speeches were alleged to have been based upon the official records of Russian operations. Their purpose was to show that the Russian sealing, which was followed by the disaster of 1834, was identical with that conducted on land by the United States in the disastrous period culminating in 1911, that is—confined to the bachelor seals or superfluous males.

Our knowledge of Russian conditions is derived exclusively from the writings of Bishop Ivan Veniaminof, a Greek-Russian priest, located for the period in question at Unalaska, and a brief extract from the report of an agent of the Russian government, Yanovsky